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CURRENT LITERATURE

BOOK REVIEWS

Practical botany

A widespread belief that botany should be so taught and adapted that it should be of service in its industrial applications, particularly agriculture, has led to the publication of several texts with this in view. The production of such a text demands an author who is not only trained in botany, but also familiar with the practical bearings of the subject. The two books reviewed here were written to meet the real or supposed need indicated.

COOK[1] states that he has aimed at three things: "(1) a brief statement of the recognized facts and principles concerning plants and plant growth usually given in textbooks for secondary schools; (2) a list of simple exercises and suggestions for observations which the pupil can conduct without great difficulty and which will demonstrate many of the statements given in the book; (3) a list of questions which are intended to be suggestive to the pupils and to encourage further studies." "The title, 'Applied economic botany,' implies (1) that it is intended as a guide to experimental work in the study of plants, such as should be carried on in any high school, and (2) that it is intended as a preliminary work to the agricultural studies which are now recognized in many high schools."

The first part treats of seeds, roots, stems, buds, leaves, flowers, reproduction, fruits, anatomy, chemical composition, food, and growth, and also outlines the great groups. In short, it is in general the usual botanical foundation given in secondary schools. There are also chapters dealing with forestry, plant diseases, plant breeding, and weeds. Much space is given to "exercises" and "questions," since it is through these that the author aims to lead the student to nature for facts, holding that "we cannot, in the short time allowed to the subject, expect to learn much about many thousands of plants . . . . but we can learn certain principles of plant growth . . . . to be close observers . . . . to be accurate in our experiments and in making records." The exercises are so selected that the material is easily available, for they are based on plants familiar to all and usually of economic importance.

The second part treats of families, discussing the chief economic representatives of each, for example, celery, parsnip, carrot, etc., among the Umbelliferae, and coffee and quinine among the Rubiaceae. The general characters of the family are given concisely, as well as the more interesting features of the history, distribution, and uses of the more important economic representatives.

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[1] COOK, M. T., Applied economic botany. 8vo. pp. xviii+261. *figs. 142.* Philadelphia: J. B. Lippincott. 1919.

The book is written in attractive style, and the material is well selected, and is a commendable effort to differentiate secondary-school botany from university botany. The numerous half-tones are of unusually good quality.

MARTIN[2] has attempted the same task, except that his book is more specifically directed to the botanical needs of the student of agriculture. The first part deals with flowers, seeds, cells, roots, stems, buds, leaves, etc. The application to agriculture consists chiefly in the fact that economic plants are used as illustrative material. For example, oats, corn, wheat, pineapple, tomato, etc., are made to show the usual fundamental facts of morphology. The second part presents an outline of the plant kingdom, from Thallophytes to Angiosperms, along with chapters on ecology, evolution, heredity, and plant breeding.

The presentation throughout is botanical rather than agricultural, a foundation for agricultural study rather than a study of agriculture. The line drawings are not as well done or as accurate as they should be, and the illustrations in general are in contrast with the excellent presswork and the easy and pleasing style of presentation.—F. L. STEVENS.

NOTES FOR STUDENTS

Physiology of dormancy.—Recent work by CROCKER and HARRINGTON[3] materially increases our knowledge of the physiology of dormancy and germination of seeds, and throws much light on the problems of vitality and respiration. Differences in the optimum temperature requirements for germination of Johnson grass and Sudan grass led to a study of their physiological differences, and a comparison of their behavior with seeds of widely separated groups of plants. The discussion therefore is a general contribution of much significance to seed physiology. The study centers in the relation of catalase content to dormancy and vitality. Some improvements in methods of measuring catalase activity are suggested, chief of which is neutralization of the hydrogen peroxide used, as it is found to be injuriously acid if unneutralized. Degree of pulverization must be considered, as seeds vary somewhat as to optimum degree of fineness. Bolting cloth of 70–100 mesh gave the best results in the seeds used. Material must also be freshly ground, as degeneration of catalase is rapid after destruction of morphological integrity.

Catalase activity is found to be 28 or 29 times as great in the embryo of Stoner wheat as in the endosperm. Sudan grass and a hybrid between Tunis grass and sorghum gave similar results. Bracts surrounding the caryopses,

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[2] MARTIN, J. N., Botany for agricultural students. 8vo. pp. xv+585. *figs. 488.* New York: John Wiley & Sons. 1919.

[3] CROCKER, WM., and HARRINGTON, G. T., Catalase and oxidase content of seeds in relation to their dormancy, age, vitality, and respiration. Jour Agric. Research **15**:137–174. 1918.